

# Optimization of the F-35 Acquisition

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## INTRODUCTION

Historically, the Marine Corps has diversified its aviation combat element's (ACE) tactical aviation (TACAIR) assets in order to ensure flexibility across its missions in support of the Marine air ground task force (MAGTF). During WWII, the Marine Corps employed the F-4F and F-4U Corsair to support the MAGTF. In the 1960's and 70's, the MAGTF was supported by the A-4 Skyhawk, F-4 Phantom, and the A-6 Intruder. Currently, the Marine Corps utilizes the fighting capabilities of the F/A-18 and AV-8 to support the MAGTF.

The current Marine Corps plan to transition to a single platform, all short take-off vertical landing (STOVL) TACAIR community, through its acquisition the Marine Corps' variant of the joint strike fighter (JSF), the F-35B, unnecessarily handcuffs the ACE by impeding its flexibility and reducing its capabilities. In contrast to the Marine's STOVL variant of the JSF, the Navy's JSF variant, the F-35C, has aircraft carrier suitability, a greater ordnance payload, longer strike ranges, and increased on-station time that will enhance the ACE's ability to support the MAGTF commander. Therefore, the Marine Corps must purchase both the F-35B and the F-35C in order to gain flexibility, efficiency, and capability, while mitigating the "red stripe" risk of a single platform TACAIR community.

## TACAIR INTEGRATION

One of the greatest assets to Marine TACAIR is the speed and flexibility it gains through carrier deployment. The TACAIR Memorandum of Understanding, signed by the Chief of Naval Operations (CNO) and Commandant of the Marine Corps (CMC) on 14 August 2002, outlines an agreement between the Navy and the Marine Corps that integrates Carrier Strike Groups (CSGs), Expeditionary Strike Groups (ESGs), and MAGTFs.<sup>1</sup> Specifically, this memorandum dictates that Marine Corps TACAIR assets supplement carrier air wings while, in turn, Navy TACAIR assets supplement the MAGTF via the unit deployment program (UDP). The purpose of TACAIR integration is "to provide Combatant and Joint Force Commanders with flexible, responsive, interoperable and expeditionary forces."<sup>2</sup> The Marine Corps currently supplements Navy carrier air wings with three F/A-18C squadrons while the Navy provides one squadron to the USMC UDP.

The TACAIR Memorandum of Understanding is not without criticism from those who do not fully understand the benefits that integration brings to the Navy and Marine Corps. A popular argument against TACAIR integration is that this agreement takes assets away from the ACE and ultimately from the MAGTF commander

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<sup>1</sup> Department of the Navy, Department of the Navy Tactical Aircraft Integration, 2008 (Washington, D.C.: GPO, 2008), 2.

<sup>2</sup> Department of the Navy, Department of the Navy Tactical Aircraft Integration, 2008 (Washington, D.C.: GPO, 2008), 1.

in order to support the CSG. Although this is a provocative perspective, it is short sighted because the MAGTF commander will not go unsupported. In fact, TACAIR integration ensures that the MAGTF commander is supported when it counts most, during the first days of conflict.

The Marine Corps must not lose sight of the future in the current operating environment. In the Commandant's Vision and Strategy 2025, the Marine Corps is called back to its amphibious roots, to "respond swiftly, with little warning, to emerging crises" and to "maximize speed and freedom of action through seabasing, while minimizing footprint ashore."<sup>3</sup> TACAIR integration significantly increases the availability of Marine TACAIR to support Marines during the early stages of conflict. In fact, the TACAIR integration memorandum provides "the Department of the Navy with the flexibility to employ sea-based squadrons and move those squadrons ashore when required..."<sup>4</sup> In addition to meeting the requirements of the MAGTF commander, TACAIR integration provides less obvious benefits to the ACE. The Marine Corps' influence on the Carrier Strike Group's mission planning, superior training, and cost efficiency are three huge benefits the Marine Corps and the Navy gain through TACAIR integration.

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<sup>3</sup> Gen. James T. Conway, *Marine Corps Vision and Strategy 2025* (PCN 50100654800, 2008), 6.

<sup>4</sup> Department of the Navy, *Department of the Navy Tactical Aircraft Integration*, 2008 (Washington, D.C.: GPO, 2008), 2.

Marine aviation assets deploying from the deck of an aircraft carrier is not a new concept. Marine Corps aviators have a long and illustrious carrier-based history which has proven essential to mission accomplishment from the Pacific of WWII to the current conflicts in Iraq and Afghanistan. The Marine Corps carrier aviation tradition is in serious jeopardy with the current Marine Corps plan to transition to an all STOVL TACAIR force.

#### CARRIER SUITABILITY

The F-35C was designed to be employed from the deck of an aircraft carrier.<sup>5</sup> Because of the time-critical nature of shipboard operations, the F-35C was designed to have approach speeds, on-station times, and deck cycle times comparable to the other carrier-based aviation assets.<sup>6</sup> In contrast, the F-35B will have to overcome significant hurdles in order to integrate into a carrier air wing. For example, the F-35B's approach speed is much slower than the F-35C and its on-station time is much shorter. These aircraft specifications will have a significant negative impact on the efficiency of cyclic operations aboard aircraft carriers. The reality is that operating a STOVL aircraft during a carrier deck cycle will substantially limit

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<sup>5</sup> John Pike, *F-35C Carrier Variant Joint Strike Fighter*, 8 December 2009, <<http://www.globalsecurity.org/military/systems/aircraft/f-35c.htm>> (30 August 2009).

<sup>6</sup> Ibid.

the amount of sorties the carrier can generate. In addition to impacting the number of sorties, the aircraft cycle times would need to be shortened in order to accommodate the STOVL, resulting in less airborne training time.

#### CAPABILITY

The ability to launch from an aircraft carrier is not the only advantage that the F-35C has over the F-35B. The carrier version of the JSF can also carry a greater internal payload, has a significantly longer range, and has the ability to stay on station longer than the STOVL model. Additionally, the carrier version has the ability to carry a 2000-pound joint direct attack munition (JDAM) and Joint Stand-off Weapon (JSOW), whereas the STOVL is not able to do so.<sup>7</sup> The total advertised payload capability of the F-35B is 11,000-15,000 pounds while the F-35C's capability is between 15,000 and 17,000 pounds.<sup>8</sup> The ability to carry a greater payload of more versatile weaponry allows greater flexibility to the aviator providing the ground combat element (GCE) commander with reactive weaponeering and the desired weapons effects on target.

The range and on-station time of the F-35C is also significantly more desirable than the STOVL version. The

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<sup>7</sup> John Pike, *F-35 JSF Lightning II*, 12 July 2006, <<http://www.globalsecurity.org/military/systems/aircraft/f-35c.htm>> (8 December 2009).

<sup>8</sup>

Ibid.

internal fuel capacity of the F-35C is 19,625 pounds, versus the F-35B's 13,325 pounds.<sup>9</sup> This difference of 6,300 pounds of usable fuel equates to an extra 150 nautical miles of combat radius.<sup>10</sup> In comparison, the range of the F-35C is 1,620 nautical miles verse the F-35B's 1,080 nautical miles.<sup>11</sup> In addition to the internal fuel capacity, the unique wing designs of each variant also impact the loiter capability of the platform. The F-35C's large wing area, designed for a slower approach speed for carrier operations, reduces the fuel burn rate of the F-35C, allowing it to stay on station longer in support of the Marines on the ground.

#### RED STRIPE

One of the most significant and compelling arguments against the Marine Corps transitioning to an all STOVL TACAIR force is the possibility of a "red stripe." A "red stripe" is an industry term for an official fleet-wide bulletin that grounds an aviation platform due to a mechanical issue affecting the airworthiness, or safety of the platform, and directs specific action or maintenance on all affected aircraft. Historically, "red stripes" have been prevalent in the TACAIR community. If the F-35B has a fleet-wide mechanical issue, the

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<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

<sup>11</sup> Ibid.



MAGTF commander will be without fixed-wing TACAIR assets until a mechanical fix can be implemented. However, the mixed purchase of F-35B's and F-35C's would help to mitigate this risk because the two platforms have significantly different propulsion components.<sup>12</sup>

## CONCLUSION

Current and future conflicts require the Marine Corps to be increasingly flexible and interoperable. The Commandant of the Marine Corps' vision statement in the Marine Corps Vision and Strategy 2025 directs that "Our future Corps will be increasingly reliant on naval deployment...versatile in capabilities, and innovative in mindset. In an evolving and complex world, we will excel as the Nation's expeditionary 'force of choice.'" <sup>13</sup> This vision statement directs a flexible and versatile ACE that is capable of massing firepower from both the sea and from austere environments. Flexibility, versatility, and interoperability are best accomplished through the acquisition of both the STOVL and carrier variants of the JSF.

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<sup>12</sup> John Pike, *F-35 Joint Strike Fighter (JSF) Propulsion*, 30 August 2008, <<http://www.globalsecurity.org/military/systems/aircraft/f-35-prop.htm>> (8 December 2008).

<sup>13</sup> Gen. James T. Conway, *Marine Corps Vision and Strategy 2025* (PCN 50100654800, 2008), 9.

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